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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,356	02/02/2001	Young Kim	TESSERA 3.0-109 CIP DIV	1379

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LERNER, DAVID, LITTENBERG,  
KRUMHOLZ & MENTLIK  
600 SOUTH AVENUE WEST  
WESTFIELD, NJ 07090

EXAMINER
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GRAYBILL, DAVID E

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 09/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/776,356

Applicant(s)

KIM ET AL.

Examiner

David E Graybill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-6, 8-13, 15-18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Nicewarner (5646446).

At column 5, line 37 to column 6, line 60, and column 10, line 10 to column 12, line 8, Nicewarner teaches the following:

9. A method of making a stacked microelectronic assembly comprising: providing a flexible substrate 12 including a plurality of attachment sites 60, 62, 64, 66, said flexible substrate having a first surface 16, a second surface 14 opposite said first surface, first electrical contacts 69

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accessible at at least one of said first and second surfaces, second electrical contacts 70c, 70d accessible at at least one of said first and second surfaces, wiring 44, 46, 48, 49, 50 connected to said first and second electrical contacts, and flexible leads 70a, 70b, 70c, 70d, extending to said attachment sites; assembling microelectronic elements 18, 24 to said attachment sites, electrically connecting said microelectronic elements to said flexible leads; folding said flexible substrate into a folded configuration so that said first electrical contacts are accessible at a bottom of said microelectronic assembly and said second electrical contacts are accessible at a top of said microelectronic assembly; and maintaining said flexible substrate in the folded configuration.

10. The method as claimed in 9, wherein said first electrical contacts are electrically conductive terminals and said second electrical contacts are test contacts.

11. The method as claimed in 10, wherein said test contacts are exposed at the top of said microelectronic assembly.

12. The method as claimed in 10, wherein said conductive terminals and at least some of said test contacts are accessible at the second surface of said flexible substrate.

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13. The method as claimed in 11, wherein at least some of said test contacts are accessible (at least electrically) at the first surface of said flexible substrate.

15. A method of making a microelectronic assembly, comprising the steps of: providing a flexible substrate have at least one attachment site, said flexible substrate including a first surface and a second surface and having a plurality of first electrical contacts accessible at at least one of said first and second surfaces, second electrical contacts accessible at at least one of said first and second surfaces, wiring connected to said first and second electrical contacts, and flexible leads extending to said at least one attachment site; assembling a microelectronic element to said at least one attachment site; electrically connecting a microelectronic element to said flexible leads; folding said flexible substrate into a folded configuration having a folded portion; and maintaining said flexible substrate in the folded configuration, wherein said first electrical contacts are exposed at a bottom end of said microelectronic assembly and said second electrical contacts are exposed at a top end of said microelectronic assembly.

16. The method as claimed in 15, wherein said first electrical contacts are electrically, conductive terminals and said second electrical contacts are test contacts.

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17. The method as claimed in 16, wherein said conductive terminals are accessible at the second surface of said flexible substrate and at least some of said test contacts are accessible at the second surface of said flexible substrate.

18. The method as claimed in 15, wherein at least some of said test contacts are accessible at the first surface of said flexible substrate.

20. The method as claimed in 15, further comprising: attaching a second microelectronic element to said flexible substrate; vertically aligning the first and second microelectronic elements with one another during the folding step.

1. A method of making a stacked microelectronic assembly comprising the steps of:

I. providing a flexible substrate having a plurality of attachment sites, said flexible substrate including a first surface and a second surface and having a plurality of electrically conductive terminals accessible at at least one of said first and second surfaces; test contacts accessible at at least one of said first and second surfaces; and wiring connected to said terminals and test contacts and flexible leads extending to said attachment sites;

II. assembling a plurality of microelectronic elements to said attachment sites;

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III. electrically connecting said microelectronic elements and said leads;

IV. folding said flexible substrate and stacking at least some of said microelectronic elements in substantially vertical alignment with one another; and

V. maintaining said stacked microelectronic elements in said substantially vertical alignment, wherein said conductive terminals are exposed at a bottom end of said stacked assembly.

2. The method of 1, wherein the test contacts are exposed at a top end of said slacked assembly.

3. The method 2, wherein the terminals are accessible at the second surface and at least some of the test contacts are accessible at the second surface.

4. The method of 3, wherein at least some of the test contacts are accessible at the first surface.

5. The method of 2, further comprising the step of disposing a spacer 31 the flexible substrate between two adjacent microelectronic elements.

6. The method of 5, further comprising the step of adhering the spacer to the flexible substrate.

8. A method of making a microelectronic assembly, comprising the steps of:

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- I. providing a flexible substrate have at least one attachment site, said flexible substrate including a first surface and a second surface and having a plurality of electrically conductive terminals accessible at at least one of said first and second surfaces; electrically conductive test contacts accessible at at least one of said first and second surfaces; and wiring connected to said terminals and said test contacts and including flexible leads extending to said attachment sites;
- II. assembling a microelectronic element to said attachment site;
- III. electrically connecting said microelectronic element to said leads;
- IV. folding said flexible substrate into a folded configuration having a folded portion; and
- V. maintaining said flexible substrate in said folded configuration, said microelectronic element in said folded configurations;
- VI. wherein said conductive terminals are exposed at a bottom end of said microelectronic assembly and said test contacts are exposed at a top end of said microelectronic assembly.

To further clarify the teaching wherein the second electrical contacts are test contacts, the limitation, "test" is merely a statement of intended purpose of the contacts which



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does not result in a manipulative difference as compared to the process of Nicewarner. Furthermore, because the process of Nicewarner is inherently capable of being used for the same intended purpose, the statement of intended purpose does not patentably distinguish the claimed process from the process of Nicewarner.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicewarner as applied to claims 1-6, 8-13, 15-18 and 20, and further in combination with Akram (5739585).

As cited, Nicewarner teaches the following:

7. The method of 2, further comprising the steps of disposing a curable liquid encapsulant composition 32 between each of said two adjacent microelectronic elements and the flexible substrate, and curing the curable liquid encapsulant composition to form an encapsulant.

However, Nicewarner does not appear to explicitly teach placing a dam between two adjacent microelectronic elements, and removing the dam before folding the flexible substrate.

Nevertheless, at column 6, lines 35-42, Akram teaches a process of placing a dam around a microelectronic element, and removing the dam after encapsulation of the element. Moreover, it would have been obvious to combine the process of Akram with the process of Nicewarner because it would advantageously facilitate encapsulation.

Claims 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicewarner as applied to claims 1-6, 8-13, 15-18 and 20, and further in combination with Akram (5739585).

As cited, Nicewarner teaches the following:

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14. The method as claimed in 9, further comprising:  
disposing a curable liquid encapsulant composition between at least one of said microelectronic elements and said flexible substrate; and curing said curable liquid encapsulant composition to form a layer.

19. The method as claimed in 15, further comprising: disposing a curable liquid encapsulant composition between said microelectronic element and said flexible substrate; and curing said curable liquid encapsulant composition to form a layer.

However, Nicewarner does not appear to explicitly teach a compliant layer.

Nonetheless, at column 5, line 64 to column 6, line 8, Higashi teaches disposing an encapsulant composition 40 between a microelectronic element 36 and a flexible substrate 30 to form a compliant layer. In addition, it would have been obvious to combine the process of Higashi with the process of Nicewarner because it would advantageously provide an encapsulant.

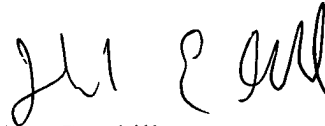
The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

***Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Customer Service whose telephone number is 703-306-3329.***

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Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/3087724.



David E. Graybill  
Primary Examiner  
Art Unit 2827

D.G.  
5-Sep-02